

## CLAIMS:

1. A host controller, for use in a bus communication device comprising a host microprocessor and a system memory, the host controller comprising:
  - a first interface for connection to a memory bus which connects the host microprocessor and the system memory, such that the host controller is adapted to act only as
  - 5 a slave on the memory bus;
  - an internal memory, for storing a plurality of transfer-based transfer descriptors received through the first interface; and
  - a second interface, for connection to an external bus,wherein the host controller is adapted to:
  - 10 - execute stored transfer-based transfer descriptors;
  - update the content of the stored transfer-based transfer descriptors on execution; and
  - copy the updated stored transfer-based transfer descriptors to the system
  - 15 memory.
2. A host controller as claimed in claim 1, wherein the internal memory is a dual-port RAM.
3. A host controller as claimed in claim 1, wherein the internal memory is a
- 20 single-port RAM, and the host controller further comprises an arbiter to allow data to be written to and read from the RAM essentially simultaneously.
4. A host controller as claimed in claim 1, wherein the internal memory is divided into two parts, and is adapted to store transfer-based transfer descriptor headers in a
- 25 first part, and to store transfer-based transfer descriptor payload data in a second part.
5. A host controller as claimed in claim 4, wherein the first part of the internal memory is sub-divided into two sub-parts, and is adapted to store transfer descriptor headers

relating to periodic transfers in a first sub-part, and to store transfer descriptor headers relating to asynchronous transfers in a second sub-part.

6. A host controller as claimed in claim 5, wherein the host controller is adapted to scan the first sub-part of the internal memory once in each micro-frame, and is adapted to scan the second sub-part continuously throughout each micro-frame.

7. A host controller as claimed in claim 1, wherein the host controller is a USB host controller and the second interface is a USB bus interface.

10

8. A host controller as claimed in claim 1, wherein the internal memory is adapted to store multiple micro-frames of transfer descriptors, and to execute the stored transfer descriptors without intervention from the host microprocessor.

9. A host controller as claimed in claim 8, wherein each of the multiple micro-frames of transfer descriptors may store payload data relating to one or more of isochronous, interrupt and bulk data transfers.

10. A bus communication device, comprising:

20 - a host microprocessor;

- a system memory;

- a memory bus, which connects the host microprocessor and the system memory; and

- a host controller,

25 wherein the host microprocessor is adapted to form transfer-based transfer descriptors, and write the transfer-based transfer descriptors to the system memory and to the host controller, and

wherein the host controller comprises:

- a first interface for connection to the memory bus, such that the host controller

30 is adapted to act only as a slave on the memory bus;

- an internal memory, for storing a plurality of transfer-based transfer descriptors received through the first interface; and

- a second interface, for connection to an external bus,

wherein the host controller is adapted to:

- execute stored transfer-based transfer descriptors;
  - update the content of the stored transfer-based transfer descriptors on execution; and
  - copy the updated stored transfer-based transfer descriptors to the system
- 5 memory.

11. A bus communication device as claimed in claim 10, wherein the second interface of the host controller is a USB bus interface, and the bus communication device is adapted to act as a USB host.

10

12. A bus communication device as claimed in claim 10, wherein the host microprocessor is adapted to write a plurality of micro-frames of transfer descriptors to the system memory and to the host controller, and the host controller is adapted to execute the plurality of micro-frames of transfer descriptors without intervention from the host
- 15 microprocessor.